CLAIMS:

1. Method for assembling a camera module comprising a substrate (10), a lens (33) and an image sensor chip (40) having a light-sensitive surface (41), wherein in an assembled state an optical axis of the lens (33) extends in a z-direction and the light-sensitive surface (41) of the image sensor chip (40) extends at a pre-determined sensor surface position perpendicular to the z-direction, the method comprising the following steps:
a) aligning a detector (80) of a measuring device with the optical axis of the lens (33);
b) displacing the lens (33) in the z-direction;
c) determining an optimal z-position for the lens (33) on the basis of measuring signals from the measuring device, wherein measuring is performed at a measuring position (74);
d) bringing the lens (33) to the optimal z-position, preferably fixing the lens (33) with respect to the substrate (10);
e) removing the measuring device; and
f) placing the image sensor chip (40).

2. Method according to claim 1, wherein the measuring device (80) is positioned at a bottom surface (12) of the substrate (10).

3. Method according to claim 1 or 2, wherein the measuring device comprises a diaphragm opening (75) aligned with the optical axis of the lens (33), and a light sensor (80) receiving all light passing through the diaphragm opening (75), and wherein step c) comprises the step of determining the light intensity detected by the light sensor (80) as a function of the lens position.

4. Method according to any of claims 1 to 3, further comprising the step of determining a maximum light intensity.

5. Method according to any of claims 1-4, wherein the measuring position coincides with the sensor surface position, and wherein the displacement of the lens (33) is stopped as soon as the optimal z-position is reached.

6. Method according to claim 4, wherein the measuring position coincides with the sensor surface position, wherein displacement of the lens (33) is continued after having reached the optimal z-position, wherein step c) comprises the step of calculating a distance between the present z-position and the optimal z-position, and wherein step d) comprises the step of displacing the lens (33) in an opposite direction over the calculated distance.

7. Method according to claim 4, wherein the measuring position is above the sensor surface position, at a pre-determined distance ΔZ_2, wherein displacement of the lens (33) is continued after having reached a reference z-position at which the measuring signals have a maximum value, wherein step c) comprises the step of calculating a distance ΔZ_1 between the present z-position and the reference z-position, and wherein step d) comprises the step of displacing the lens (33) over a distance $\Delta Z_2 - \Delta Z_1$.

8. Method according to any of claims 1-7, wherein the displacement of the lens (33) takes place step by step.

9. Method according to claim 8, wherein the measuring position is at a pre-determined distance ΔZ_2 from the sensor surface position, and wherein the predetermined distance ΔZ_2 is larger than one step of the displacement of the lens (33).

10. Method, preferably according to any of claims 1-9, wherein a lens assembly (30) having a lens (33) is press-fitted in a mount (14), which is fixedly attached to a substrate (10) or an integral part thereof, the method comprising the step of pushing the lens assembly (30) into the mount (14) until the lens (33) has reached a desired position.

11. Positioning device (70) for use in a method according to any of claims 1-9, the positioning device (70) comprising:

- a measuring area (74) for receiving the beam of light as being deflected by the lens (33); and
- a detector (80) for measuring the light intensity of the beam of light at the measuring area (74).

12. Positioning device (70) according to claim 11, wherein the measuring area (74) comprises a diaphragm opening (75), and wherein the detector comprises a light sensor (80) arranged to receive all light passing through the diaphragm opening (75).

13. Positioning device (70) according to claim 12, comprising a recess (72) for accommodating the light sensor (80), wherein the light sensor (80) is placed at a bottom of the measuring area (74).

14. Positioning device (70) according to any of claims 11-13, comprising a support surface (71) adapted for supporting a bottom surface (12) of the substrate (10).

15. Positioning device (70) according to claim 14, wherein the measuring area (74) is above the support surface (71), at a pre-determined distance ΔZ_2.

16. Camera module, comprising a substrate (10) and a lens assembly (30) having a lens (33), wherein the lens assembly (30) is press-fitted with respect to the substrate (10).

17. Camera module according to claim 16, wherein the lens assembly (30) is fitted in a cylindrical-shaped mount (14), the mount (14) being an integral part of the substrate (10).

18. Camera module according to claim 17, wherein the mount (14) comprises at least three elongated ribs (15) being axially oriented, and wherein the ribs (15) are distributed along an inner surface (16) of the mount (14).

19. Positioning apparatus (100) for positioning a lens (33) with respect to a substrate (10), the positioning apparatus (100) comprising:
- a positioning device (70), preferably according to any of claims 11-15;
- a controller (120) for receiving measuring signals S from a measuring device;
- a controllable manipulator (110) for displacing the lens (33) with respect to the substrate (10);
wherein the controller (120) is adapted to actuate the manipulator (110) on the basis of the measuring signals S.